

MILLSAPS COLLEGE BULLETIN

JACKSON, MISSISSIPPI, JANUARY, 1930

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NUMBER ONE



ADMINISTRATION BUILDING



CAMPUS SCENE

Millsaps College Bulletin

JACKSON, MISS.

Vol. XIII

JANUARY, 1930

NUMBER 1

Announcements 1930-31

Thirty-Ninth Session

Begins Wednesday, September 10th

Entrance Examinations September 10-11

Recitations Begin September 12



Alma Mater

*Alma Mater, dear old Millsaps,
Loyal sons are we;
Our fond hearts are thine alone
And evermore shall be
Proud art thou in classic beauty
Of thy noble past,
With thy watchword, Honor, Duty,
Thy high fame shall last.*

*Ev'ry student, man and maiden,
Swell the glad refrain,
Till the breezes, music laden,
Waft it back again.
Proud art thou in classic beauty
Of thy noble past,
With thy watchword, Honor, Duty,
Thy high fame shall last.*

Foreword

THIS pictorial bulletin is designed to set forth in brief form the salient features of the work and organization of Millsaps College, Jackson, Miss. The faculty, the training and experience of each member, the courses offered, the necessary expenses, the many cultural advantages offered by Jackson, the Capital City of Mississippi, and some idea of student life and activities other than scholastic are presented herein. Many of the pictures are taken from the Bobashela which is published annually by the senior class.

It is believed that all the facts necessary to a choice of Millsaps College are presented here and those who want to be sure of admission should forward the registration fee at once as indicated on the last page of this bulletin. Applications will be passed upon as rapidly as received. If for any reason whatever the student should find it impossible to attend college and should not enter elsewhere, this preliminary fee will be returned in full.

If more detailed information is desired before registering, however, we shall be glad to send our complete catalogue, upon request.

The College Faculty and Assistants

DAVID MARTIN KEY
M. A., Ph. D., LL. D.
President and Professor of Ancient Languages
(President's Home, Campus)
B. A., Central College, 1898; M. A., Vanderbilt University, 1906; Ph. D., University of Chicago, 1916; LL. D., Emory University, 1926.

JOHN MAGRUDER SULLIVAN
M. A., Ph. D.
Professor of Chemistry and Geology
(2 Park Ave.)
B. A. Centenary College, Louisiana, 1887; M. A., University of Mississippi, 1890; M. A., Vanderbilt University, 1897; Ph. D., Vanderbilt University, 1900.

GEORGE LOTT HARRELL
B. S., M. S.
Professor of Physics and Astronomy
(812 Arlington Ave.)
B. S., Millsaps College, 1899; M. S., Millsaps College, 1901.

J. REESE LIN
B. A., M. A.
Professor of Philosophy and History
(712 Arlington Ave.)
B. A., Emory College; M. A., Vanderbilt University.

BENJAMIN ERNEST MITCHELL
M. A., Ph. D.
Professor of Mathematics
(727 Arlington Ave.)
B. A., Scarritt-Morrisville College, 1900; M. A., Vanderbilt University, 1908; Ph. D., Columbia University, 1916

ALBERT GODFREY SANDERS
B. A., M. A.
Professor of Romance Languages
(735 Arlington Ave.)
B. A., Yale University, 1907; Rhodes Scholar, 1907-1910; B. A., University of Oxford (Honors School,) 1910; M. A., Ibid, 1914

ALFRED PORTER HAMILTON
M. A., Ph. D.
Professor of Latin and German
(777 Belhaven Ave.)
B. A., Southern University, 1908; M. A., University of Pennsylvania, 1911; Ph. D., Ibid, 1923

MILTON CHRISTIAN WHITE
B. A., M. A.
Professor of English
(1715 Edgewood Ave.)
B. A., Southern University, 1910; M. A., Harvard University, 1914

GEORGE W. HUDDLESTON
B. A., M. A.
Associate Professor of Ancient Languages
(1321 North President Street)
B. A., Hiwassee College, 1883; M. A., Hiwassee College, 1886

ROSS HENDERSON MOORE
B. A., A. M.
Assistant Professor of History
(1327 North State Street)
B. A., Millsaps College, 1923; A. M., University of Chicago, 1928

BENJAMIN ORMOND VAN HOOK
B. A., M. A.
Assistant Professor of Mathematics and Athletic Director
(Founder's Hall)
B. A., Millsaps College, 1918; M. A., Vanderbilt University, 1922

CLINTON L. BAKER
B. S., M. S.
Assistant Professor of Biology
B. S., Emory University, 1925; M. S., Ibid, 1926

ELIZABETH CRAIG
B. A.
Instructor in French
(610 North State Street)
B. A., Barnard College, Columbia University, 1922

MAGNOLIA SIMPSON
B. A., A. M.
Assistant Professor of Latin
(1507 North West Street)
B. A., Millsaps College, 1924; A. M., University of Pennsylvania, 1927

CHARLES FRANKLIN NESBITT
A. B., B. D.
Associate Professor of Religious Education
(1405 North West Street)
A. B., Wofford College, 1922; B. D., Emory University, 1926

MRS. W. O. BRUMFIELD
A. B.
Instructor in Spanish
(Country Club Place)
A. B., Cumberland University, 1922

NEWTON CLIFFORD YOUNG
B. S.
Instructor in English and Assistant Coach
(Founders Hall)
B. S., Millsaps College 1925
EDWIN WHITFIELD HALE
Head Coach
(Burton Hall)

JOHN GARFIELD LEONARD
Director of Band
(1212 Lyncrest Street)

MRS. LEO B. ROBERTS
B. A., M. A.
Assistant Professor of English
(323 Wesley Avenue)
B. A., University of South Carolina, 1921; M. A., University of South Carolina, 1922

HENRY CONRAD BLACKWELL
Ph. B., M. A.
Associate Professor of Religious Education
(4 Park Ave.)
Ph. B., Emory University, 1925; M. A., Duke University, 1926

FRANKLIN COLBERT JENKINS
B. S., M. A.
Professor of Education
(1302 N. Congress Street)
B. S., University of Mississippi, 1913; M. A., Peabody College, 1925

LAWRENCE EUSTACE LEAVER
B. S., M. A.
Assistant Professor of Education
(226 Lorenz Boulevard)
B. S., Warrensburg State Teachers College, 1925; M. A., University of Missouri, 1929

HULDA A. DILLING
B. S.
Assistant Professor of Education and Director of Practice School
(1509 N. West Street)
B. S., Illinois State Normal University, 1917

MRS. J. L. ROBERTS
A. B., B. M.
Director of Piano
(710 East Poplar Bldg.)
A. B., B. M., Whitworth College; Sherwood Music School; American Conservatory; Pupil of Elizabeth McVoy, Albert Berne, Georgia Kober, Silvio Scionti, Walter Keller. Special work with Josef Lhevinne, Fannie Bloomfield Zeisler, and Percy Grainger.

FRANK SLATER
B. M.
Director of Voice
(820 Oakwood Avenue)
B. M., New Orleans Conservatory of Music; Student Royal College of Music, Manchester, England. Pupil of John Francis Harford and Madame Marie Brema. In New York, pupil of F. H. Haywood. Special opera coaching work with Sol Alberti and Emil Polak.

Quality of Work of Students

THE strongest claim Millsaps College has to make on the attention of those who are selecting their college is her well established reputation for thorough work. She has a tradition of sound scholarship. Other schools may be known for their brilliant social functions, or victorious athletic teams, but Millsaps College, while not neglecting these things, is known and recognized because of her strong faculty, and her insistence upon sound scholarship. For several years the "quality-point" system has been in use. Under this system, the student must not only do passable work in each subject, but in at least some of the subjects must do notably excellent work in order to pass on to the class above. Furthermore, definite faculty regulations require the withdrawal of students who do not pass in at least three subjects.

Every two weeks a check upon the work of all students is made and those who are reported as not doing satisfactory work in two subjects are required to report to study hall where they are given special assistance in supervised study for two hours of each evening for the following two weeks. Many students find this special assistance very helpful. If, however, a student cannot or will not succeed in passing a major portion of his work, he is promptly dropped at the end of any term. This policy, in which Millsaps was a pioneer, is now followed by many of our first class colleges. A student who has done sound, honest, successful work in the high school need have no fears that the same sort of application will bring equal success in college, however.

The insistence of Millsaps College on a reasonable degree of industry has been more than justified by the academic record of her students and by the achievements of her graduates both in the life of the state and in advanced studies in graduate and professional schools.

Some years ago in the state-wide survey of Mississippi made under the auspices of the State Department of Education, Millsaps College rated ahead of all the other educational institutions of the state and on a par with the colleges of the entire country. The following significant statements were made in the report of this survey: "It appears that Millsaps has secured a reputation for high scholarship and thorough training and the effect of this is to attract students of superior ability. Millsaps students are distinctly in the lead in educational achievement, as well as intellectual ability."



MEN'S GLEE CLUB

Millsaps Graduates at the Leading Universities

A student will not be admitted to advanced study at the best graduate schools who has not had thorough training attested by a degree from a standard college. The thoroughness of the work done at Millsaps is proven by the success of her graduates in this form of endeavor. A recent study of the achievements at the universities of graduates of the college of the years 1924-1928 shows that about 25% of Millsaps graduates have been inspired to continue in advanced study, that 90% of these were reported as achieving a success satisfactory or better, and that over 30% of them did work at the universities of the highest rank. The following statements are of interest.

COLUMBIA UNIVERSITY:

"It has been our custom to accept graduates of Millsaps College as graduate students in full standing."

UNIVERSITY OF MICHIGAN:

"Did excellent work, receiving (in one year) the degree of Master of Arts."

UNIVERSITY OF CHICAGO:

"We regard this as a satisfactory record."

VANDERBILT UNIVERSITY:

"We have practically always found the graduates of Millsaps College do well in graduate work at Vanderbilt University."

UNIVERSITY OF NORTH CAROLINA:

"I am glad to report that the grades at the University of North Carolina were unusually high."

GEORGE WASHINGTON UNIVERSITY:

"Judging by the results attained here he must have had satisfactory ground work in his undergraduate work at Millsaps College."

UNIVERSITY OF VIRGINIA LAW SCHOOL:

"It give me genuine pleasure to report that these students did conspicuous work and stood practically at the head of the class during the whole of the three years."

"That this remarkable record should have been made by two men from the same college is an interesting coincidence, and must reflect much credit on the training received at your institution. If you have any more material like this, pray send it forward!"

UNIVERSITY OF LOUISIANA:

"From his record, I should say that the work at Millsaps is very well done * * * * My experience in the case of men who have been graduated from Millsaps is that they are excellent in quality and have adequate undergraduate training in the essential subjects."

PEABODY:

"Has led the class all year."

GENERAL ASSEMBLY TRAINING SCHOOL FOR LAY WORKERS: (Richmond, Va.)

"All of her grades at the close of the last term ran over ninety and the majority of them ran over ninety-five. If she is a sample of the work that you are doing, then we can testify that you are doing a very high grade of work."

NORTHWESTERN:

"Master's degree was granted at the end of the year * * * * He is very highly thought of in the department where he has been working."

STANFORD UNIVERSITY:

"Made an excellent record here during the last autumn quarter. She carried 16 units of work and received a grade of A in all of them."

EMORY UNIVERSITY:

"There are at present four Millsaps graduates doing work in the Candler School of Theology, all doing work of excellent quality."

MOODY BIBLE INSTITUTE:

"Made A's in every subject to which she was assigned; the record she has made thus far with us is proof of the value of the training she has received at your college."

UNION THEOLOGICAL SEMINARY:

"Work for three years in this Seminary was of high grade. His grades throughout were all above 90, and most of them above 95."

Athletics



CAPTAIN MILLER



HALE

VAN HOOK

Football

TEN games and only one defeat, is Millsaps' football record for 1929. Again Coach Hale's team "came through," and gained general recognition as one of the best teams in S. I. A. A. circles, and certainly as good as the best in the State of Mississippi. Mississippi College was defeated, Ole Miss couldn't play us, and A. & M. was glad to get by with a tie.

Prospects for next session are even better. Losses by graduation are few, and accessions from the fine freshman team of this year will materially strengthen the varsity squad.

Coach Hale's teams have the spirit of fight and of victory. Hale is not an easy coach; he believes in rigid discipline, strenuous training, hard, fair fighting, and the will to win. He likes Millsaps and Millsaps likes him. He expects to be with us for several years yet.

Next fall's schedule finds us playing some of the strongest S. I. A. A. teams, among them Stetson University of Deland, Florida, whom we meet at the State Fair. The return agreement gives our team a delightful trip into Florida in 1931. The traditional battle with the Choctaws has been set as an annual Thanksgiving event.



Basketball

Our basketball season is now in full swing. The team, so far, has met a number of strong independents as well as college teams. Of twelve games played, Coach Van Hook's squad has won eleven, and lost the other by a single point. We have every prospect for the best team in the history of the school, and should make an excellent showing in the great S. I. A. A. tourney—to be staged again this year in the Jackson Auditorium.

Baseball

Coach Hale's baseball team last spring gave a good account of itself and the freshman team was generally victorious. From the freshman squad, the Varsity team receives this year several capable pitchers as well as other players. An attractive schedule of games has been arranged, with some interesting trips into Alabama and Louisiana.

Tennis

Six men composed the Millsaps tennis team in 1929. Their record of victories was almost perfect against teams from Delta State, A. & M., and Mississippi College. Centenary was the only opponent of Millsaps which won a majority of the matches played. A strong team will represent Millsaps again this year.

Track

Coach Young has arranged several track meets for the spring. A number of Varsity track men are being uncovered, though Coach Young this session is concentrating on his freshman material. The sport is young at Millsaps, but interest is growing, and with the completion of our handsome regulation track, Millsaps will soon be able to act as host to the important track events of the South.

Intramural Sports

Tournaments are held in each sport. Rivalry is keen among the various groups which struggle for the silver cups symbolic of intramural championship. Each session, more than ninety per cent of the male students engage in some form of competitive sport.

Girls' Sports

Basketball continues to be the best loved sport among Millsaps co-eds. Mrs. Brumfield's squad this year is almost twice as large as usual. Despite the loss by graduation of several star players from last year's team, the present season gives promise of fine success. So far the girls have won four contests and dropped one. The team looks as good as any in the state.

Interest in tennis is growing among co-eds. Their coach has ordered complete new tennis equipment, and several enthusiastic girl players assert that this spring will see a good co-ed team representing Millsaps in intercollegiate tennis matches.

Individual Awards

To every student making any team for the first time, the Millsaps Athletic Association gives a purple sweater. This is true of girls' sports as well as boys'. Freshman sweaters have numerals; the sweater awarded to a Varsity player carries with it the coveted M.



Cultural Opportunities

A PART from the development of the various class room exercises and the formal courses of study, the college student will naturally be eager to come in touch with the best in the vivid life of our times in thought, music, and art. The location of his college in a large city enables a student to utilize his leisure in forming many contacts and gaining experiences of the greatest value and interest. In Jackson, the capital and metropolis of Mississippi, you may see and hear the best that comes to Mississippi—preachers, singers, statesmen, musicians. Among the great personalities that have visited Jackson in recent years are Herbert Hoover, Charles Lindbergh, Robert A. Millikan, Paderewski, Mary Garden, E. H. Sothern, the Freiburg Passion Players.

For a number of years the Chicago Civic Opera Company has presented a short season of Grand Opera in Jackson. The annual meeting of the Mississippi Educational Association and very many other state and national conventions, bring to Jackson the outstanding leaders in the intellectual, industrial and artistic life of the state and nation. The State Legislature in its biennial sessions and the various executive and judicial officials, whose headquarters are in the capitol, present opportunities for the Mississippi youth studying at Millsaps to learn first hand of the movements and problems that will determine the future of his state.

Finally, the churches and congregations of Jackson, both numerically and in spiritual and intellectual vigor, are dominant influences in the religious life of the state. Here you are at the center of things. Here your very hours of relaxation and diversion may be to build up rather than dissipate your resources.



Department of Music



MR. FRANK SLATER
Voice



MRS. J. L. ROBERTS
Piano

MILLSAPS College has made careful provision for the session of 1930-31 to meet the demand for recognition of musical study among the students by establishing a Department where students may receive a course similar to that offered in the very best conservatories. As modern advancements in general educational work have left a strong impress on all matters pertaining to music, the system of teaching as pursued in this department of Millsaps College will be based on the most progressive and enlightened art principles. It embraces regular studio work in Piano and Voice.

Credit up to twelve hours may be offered toward A. B. and B. S. Degrees for both theoretical and practical work in the Fine Arts Department. Candidates for college degrees who elect music as a major will be required to complete the junior requirements in piano.



NEW SCIENCE BUILDING

Student Activities

VARIOUS student organizations manifest the different interests and avocations of a representative body of students. Several Greek letter fraternities bring congenial groups together for fellowship and relaxation. Attractive club rooms are provided in chapter houses, some of which are owned by the local chapters and are located on the campus. The Galloway, the Philomathean, and Lamar Literary Societies maintain the traditional interest in debate and oratory. Millsaps' leadership in forensic interests is shown by the fact that the State High School Debate Tournament has been held at Millsaps for many years, and by the fact that the college teams have won a large majority of their contests in recent years.

The Kit Kat Club and Chi Delta Phi bring together those interested in writing. The Purple and White, the campus weekly, and the Bobashela, the year book, afford also an opportunity for publication.

For the musically inclined, there are several organizations, the Girls' Glee Club, the Men's Glee Club, the Millsaps Band, Orchestras, etc. Each of these organizations gives several public entertainments during the year. The glee clubs make several trips. Since WJDX has been on the air, the Millsaps organizations broadcast a program on the third Wednesday of each month, eight to nine o'clock.

The student community also expresses in a number of organized activities the moral and religious life of its members. The Y. M. C. A. and the Y. W. C. A. have influential chapters to which most of the students belong. For several years, the Millsaps Y has been a leader in the state in extension work, sending out delegations for establishing Hi-Y clubs and leading in regional Hi-Y conferences. Besides the Ministerial League, composed of those preparing for the ministry, there has recently been formed a Christian Life Work Club of some thirty members. During the spring of 1929, the Methodist Students' League of Mississippi held its first convention as the guest of Millsaps College. Besides these campus activities, the students find a warm welcome and a field for active religious work in the various local churches.



THE FAIR PARADE

Boarding Facilities

THERE are three dormitories for men. Founder's Hall is beautifully situated on the East Campus, facing North State Street. It is near the Athletic Field and in it are the showers and dressing rooms for the athletic teams. Burton Hall and Galloway Hall, modern and commodious dormitories connected by a colonnade, are on the south end of the campus. They command a splendid view of the city with the great dome of the New Capitol prominent in the foreground. On and near this part of the campus there are also a number of fraternity houses with quarters for some of the members. All the lodgings are readily accessible to the mess hall adjoining Galloway Hall. The mess hall is operated on the co-operative plan. Board averages about \$18.00 per month.

Besides the above mentioned accommodations for men, there are two houses maintained as homes for young women students and the college undertakes to provide adequate and comfortable living quarters for all women not residents of the city of Jackson. As a part of the building campaign now under way, it is earnestly hoped that a new dormitory for women will be ready for occupancy next session.



CARNEGIE MILLSAPS LIBRARY

Requirements for Degree

THE Academic Schools comprise the Departments of Languages, Mathematics, Science, History, Social Science, Literature, Philosophy, Education, and Biblical instruction. In the undergraduate courses of these departments is comprised the work of the college with the degree of Bachelor of Arts and Bachelor of Science.

A full outline of the required and the elective studies offered for the degrees of Bachelor of Arts and Bachelor of Science is given below.

Sixty-four year-hours are required for graduation both for the B. A. and B. S. degrees. Specific courses are prescribed in the Freshman and the Sophomore classes, including alternative courses offered in ancient and modern languages. Courses in the Junior and Senior classes are partially prescribed and partially elective.

The average course is 16 hours for each year. Not fewer than 12 hours nor more than 19 hours may be taken in a year, unless by express permission of the President and Faculty.

Quality points. A student must earn three quality points to be classified as a sophomore; eleven points to be classified as a junior, and twenty-one points to be classified as a senior. Quality points can be earned only by work in course, thirty-two points being required for graduation. The completion of any college course with a grade of 80% for the year shall entitle a student to one quality point for each year-hour, and the completion of a course with a grade of 90% for the year will entitle a student to two quality points for each year-hour.

A student who has earned 80 quality points during his course will be graduated with "Honors;" one who has earned 128 quality points will be graduated with "High Honors."

Pre-Medical, Pre-Dental and Pre-Engineering Courses

Millsaps is primarily a liberal arts college and it is strongly urged that the full B. A. or B. S. course be completed before professional work is undertaken. But the needs of those who wish to take up professional courses after one or two years in the college have been considered. There have been organized Pre-Medical and other similar courses. In these the Mathematics, Chemistry, and Biology courses necessary for full recognition by the universities are given in the freshman and sophomore years. This work is recognized by Tulane, Vanderbilt, the University of Virginia, and other professional schools. A laboratory fee is charged for each of these courses.

TABLE SHOWING APPROXIMATE COST

Tuition for session (to be paid on entrance)	\$100.00
Tuition per half session, paid at the beginning of each half session....\$ 55.00	
Registration fee (to be paid on entrance)	15.00
An additional fee of \$3.00 will be collected for registration more than three days after the opening of any term	3.00
Library fee	6.00
Contingent deposit (unused part to be refunded)	2.00
Medical fee	5.00
Student Activities Fee	15.00
Total	\$143.00

COST OF LIVING IN DORMITORIES

Room rent for whole session, including heat and lights (to be paid on entrance)	\$ 27.00 to \$ 70.00
Room rent for half-session, if paid at beginning of each half-session.....	\$ 15.00 to \$ 40.00
Dormitory Contingent fee (unused part to be refunded).....	3.00 to 3.00
Board for nine months (estimated at \$18.00 per month).....	162.00 to 162.00
Total of necessary expenses, exclusive of books, clothes and traveling expenses	\$315.00 to \$378.00

All students rooming in the dormitory will be required to secure meals in the dining room.

DETAILED COURSES FOR THE B. A. DEGREE

Freshman		Junior	
Bible 1	3 hrs.	Physics 1	3 hrs.
English 1	3	Elective	14
Latin 1 or Greek 1	3		17
Mathematics 1	3		
History 1 or Foreign Language	3		
Physical Training	1		
	16		
Sophomore		Senior	
Foreign Language or History 1.....	3 hrs.	Logic or Ethics or History of Philosophy	3 hrs.
English 2	3	Elective	13
Latin 2 or Greek 2	3		16
Chemistry 1	3		
Elective	3		
	15		

DETAILED COURSES FOR THE B. S. DEGREE

Freshman		Junior	
Bible 1	3 hrs.	Physics 1	3 hrs.
English 1	3	Chemistry 2	2
Modern Language 1	3	Chemistry 3	1
Mathematics 1	3	Elective	10
History 1	3		16
Physical Training	1		
	16		
Sophomore		Senior	
Modern Language 2	3 hrs.	Elective	16 hrs.
English 2	3		
Mathematics 2	3		
Chemistry 1	4		
Elective	2		
	16		

Spring Registration

The process of registration and classification is greatly facilitated by early registration. In order to secure this early registration, the college will make a reduction of \$5.00 from the regular registration fee of \$15.00 for the first 100 who apply, provided such registrations are made before June 1st. This fee is payable as soon as the application is made.. In order to be sure of membership in our next freshman class and at the same time take advantage of this reduction, send this registration fee (\$10.00) at once. If for any reason you cannot enter college, this fee will be refunded. If, however, you should later decide to enter some other college, the fee would not be returned. If further information than that contained in this bulletin is desired, write for catalogue. Address

MILLSAPS COLLEGE

D. M. KEY, President,
Jackson, Miss.

Summer School

The summer session opens June 10th and closes August 25th. Regular courses are offered, meeting six to twelve hours per week for eleven weeks. Six year-hours may be taken in not more than two courses. Tuition, \$35.00; library fee, \$3.00; registration fee, \$5.00; board, \$25.00 per month. For further information address

G. L. HARRELL,

Director of the Summer School, Millsaps College,
Jackson, Miss.



MEN'S DORMITORIES

MILLSAPS COLLEGE BULLETIN

VOLUME XIII

NUMBER 5

JACKSON, MISSISSIPPI, MAY, 1930



ROBERT ANDREWS MILLIKAN

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THE NEW SCIENCE BUILDING

In this issue of the Millsaps College Bulletin, there is presented a very adequate account of the new science building and of its dedication, together with the address of Dr. Millikan. For this we are indebted to the Journal of Chemical Education, in the May number of which the article appeared.

In an editorial in this issue, the dedication and Dr. Millikan's address are spoken of as follows:

"The presence in this issue of the Journal of the dedicatory address for the opening of the new science building at Millsaps College offers the psychological occasion to preface the May number with the genial and forceful countenance of the author of that address, one of America's most distinguished physicists, Robert Andrews Millikan. Reading between the lines of his apologia for science, it is not difficult to take the tempo of Dr. Millikan's career, which, in setting a new measure in the intellectual field in which it centered, has never lost count of the rhythmic pulse of human values breaking across its own movement.

"For scholarly researches, educational institutions and scientific organizations of the highest rank, both in this country and abroad, have seen fit to confer on Dr. Millikan their highest honors, and in 1923 the Nobel Prize in physics was awarded him for his works on the unit charge of electricity and on photoelectric phenomena.

"Dr. Millikan's public utterances of the last few years have been largely replies to the demand which the world always makes to the successful man to share with his less fortunate or less enterprising brethren the conclusions which he has drawn from life, the principles he has formed or salvaged, and the outlook he has attained. He has a very strong confidence in the future spiritual and material progress of the race, and in noting the human interest with which he discusses the part that science has played and is to play in that progress, it is a very pleasant thing indeed to realize that Robert Andrews Millikan, in growing to be a giant among scientists, has remained a man among men."

[Reprinted from Journal of Chemical Education,
Vol. 7, No. 5. May, 1930.]

THE NEW SCIENCE BUILDING AT MILLSAPS COLLEGE

J. MAGRUDER SULLIVAN, MILLSAPS COLLEGE, JACKSON, MISSISSIPPI

At the inauguration some months ago of a building program for Millsaps College, Jackson, Mississippi, the citizens of Jackson and Hinds County accepted as their share of responsibility the contribution of \$150,000 toward the erection of a new and thoroughly up-to-date Science Building, which had been a recognized major need of the institution for a number of years. In less than two weeks the amount sought was exceeded, and on Thursday, November 29, 1929, Thanksgiving Day, this new and beautiful \$200,000 Science Building was dedicated. It was a "red letter day" in the history of Millsaps College. Representatives from thirty-five colleges and universities, as well as of a few scientific societies, gathered in the new building with members of the faculty, board of trustees, and alumni, who felt especially honored in having present as the chief speaker of the occasion, Dr. Robert Andrews Millikan. After the registration of guests and visitors, the body proceeded to the main assembly room in the Administration Building for the exercises of the morning.

Dedication

The following account of the forenoon program is an extract from the official report made by Professor H. Conrad Blackwell:

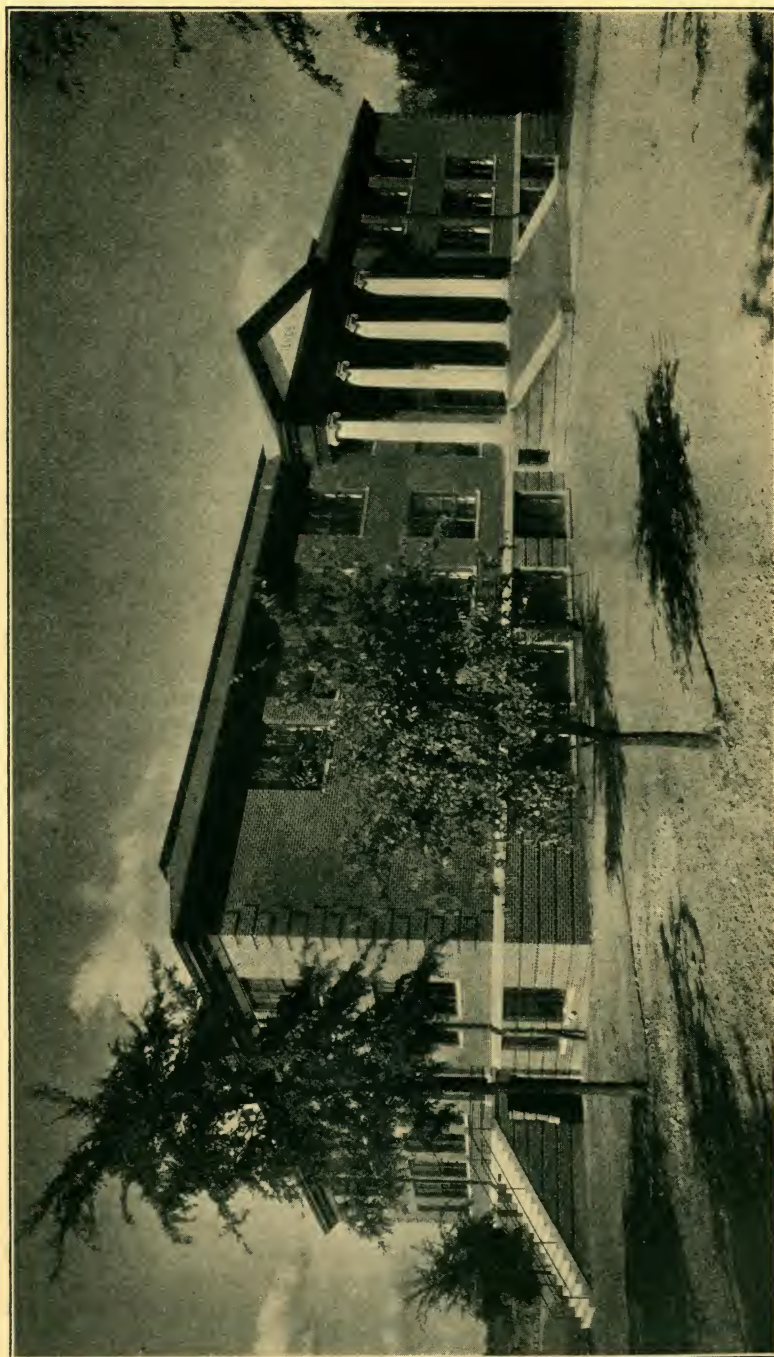
"The President, Dr. D. M. Key, presided at the exercises and stated in his brief introductory address that 'the completion of Science Hall is a monument to the loyalty and generosity of the citizens of Jackson and Hinds County, as well as the fulfilment of a long cherished hope by older members of the faculty.' Dr. Key paid fine tributes to Dr. J. M. Sullivan, professor of chemistry, and to Prof. G. L. Harrell, of the physics department, who have worked faithfully for the construction of Science Hall.

"The president next presented to the audience Mayor W. A. Scott, who presented the building for dedication. Jesse T. Calhoun, vice president of the Board of Trustees, accepted the building on behalf of that body. In his address of acceptance, Mr. Calhoun said:

We, the trustees of Millsaps College, deeply appreciate this gift. The citizens of Jackson and Hinds County have been most liberal in their contributions which have materialized into this, the finest building on our campus.

During all these years Jackson has furnished the churches in which our students have worshiped and the homes in which social life has been cultivated. Now, Jackson and Hinds County are furnishing the Science Building for intellectual improvements. This college will be able to serve in a much larger way because of this building. The sciences mean more now in the educative process than ever before because of our dependence upon advantages brought to us by science.

The trustees of this institution desire that the whole truth be sought for diligently without the least fear. Much that was in our textbooks in science thirty-five years ago, when it was my good fortune to attend this institution, seems to have been discredited. Much that is known now was unknown then. Nature's laws were the same then as now,



NEW SCIENCE BUILDING, MILLSAPS COLLEGE, JACKSON, MISSISSIPPI



CORRIDOR, FRONT ENTRANCE

Stone tablet, shown on wall between entrances to main lecture room, was donated by Dr. J. M. Sullivan, professor of chemistry, and exhibits the only inscription in the building:

"Ye shall know the truth, and the truth shall make you free."

but man's conception of them is not the same. Man's conception of the truth changes, but the truth does not change. It is not the forces of nature which have made us what we are, but the discovery and use of these forces. Many things remain yet to be discovered and many forces remain yet to be harnessed.

We do not fear the truth, and we do not fear that the instructors in Millsaps College shall lead the youth astray in their search for the truth. When science is taught by scientists who have had religious experience, we do not fear for the religious life of those who are taught. Such instructors, when they have gone as far as knowledge goes, they then by faith lead toward the great Creator and not away from him. It has always been, and will continue to be, the desire of the trustees of this institution to select such instructors as those just mentioned.

"Following Mr. Calhoun's address, Dr. H. H. Sherman addressed the gathering on behalf of the church-at-large, declaring that the erection of Science Hall marked another milestone in the progress of Millsaps College. Dr. Sherman said the erection of the building indicates that Millsaps is keeping pace with the highest ideals and demands of the present day, and is no longer just a college of liberal arts that limits its work to literature,

philosophy, and old time courses, but is taking her proper place along with other great educational institutions of the country.

Millsaps as a Church College, continued Dr. Sherman, says that science is no enemy of religion, and there is no conflict between the two when properly understood and taught. The apparent conflict is in the minds of third-rate scientists and shallow religionists. Millsaps as an institution of the Church, in opening and dedicating, accepts the responsibility and recognizes her obligation to teach science in such a way that it will reveal God and conduct youth through the wonders of modern scientific investigation and discovery in such a reverent attitude that they will find the God of the universe along the way as well as at the end of the day.

"The main address of the day was delivered by Dr. Robert Andrews Millikan, chairman of the Executive Council of the California Institute of Technology, Pasadena, California, winner of the Nobel Prize in Physics in 1923 and world-renowned scientist."

THE PLACE OF SCIENCE IN THE MODERN WORLD*

ROBERT A. MILLIKAN, CALIFORNIA INSTITUTE OF TECHNOLOGY, PASADENA, CALIFORNIA

The cardinal doctrine in the creed of every man of science is stated in the motto of the University of Chicago, namely, "*Crescat Scientia, Vita Excolatur*"—let knowledge grow, let life be enriched; or equally well in the motto of the California Institute, "The truth shall make you free." And any effort to suppress or impede the growth of science, which means to the scientist merely the growth of man's understanding of his world, and hence of his ability to live wisely in it, is to him an unpardonable sin, or at least not the work of an understanding mind.

If we are to be asked deliberately to shut our minds to the truth, or to be deterred by fear from searching for it, we might as well, so says the scientist, give up the effort at intelligent living altogether and go back to savagery. Furthermore, the whole history of man's age-long rise from superstition and ignorance up to his present estate seems to the scientist to be a practical demonstration of the essential soundness of this view.

So when a couple of years ago the Bishop of Ripon suggested to the meeting of the British Association for the Advancement of Science that it would be well for the world if science could take a ten-year holiday, his words did not meet with a chorus of applause from scientists.

But the Bishop's views are not so uncommon, and we scientists have to some extent been responsible for them. The following quotation from a book written by one of the best-informed and most intelligent of living

* Reprinted by courtesy of *Scribner's Magazine*. This article appeared in the February, 1930, issue of that magazine, pages 119-29, under the title of "Alleged Sins of Science." We have included this article in the JOURNAL in order that the account of the dedication exercises of the new science building at Millsaps College, Jackson, Mississippi, may be complete.

Americans states the case against science thus. I quote from Mr. Raymond Fosdick's recent book entitled, "The Old Savage in the New Civilization."

Humanity stands today in a position of unique peril. An unanswered question is written across the future: Is man to be the master of the civilization he has created, or is he to be its victim? Can he control the forces which he has himself let loose? Will this intricate machinery which he has built up and this vast body of knowledge which he has appropriated be the servant of the race, or will it be a Frankenstein monster that will slay its own maker? In brief, has man the capacity to keep up with his own machines?

This is the supreme question before us. All other problems that confront us are merely its corollaries. And the necessity of a right answer is perhaps more immediate than we realize. For science is not standing still. In speaking of the scientific revolution I have not been speaking of a phenomenon that was confined to the Nineteenth Century. Rather we are just at the beginning of the revolution. We could not stop it if we would. It is advancing by leaps and bounds, gaining in impetus with each year. It is giving us more machines, faster machines, machines increasingly more intricate and complex....

Life in the future will be speeded up infinitely beyond the present. Sources of energy will be tapped and harnessed far outrivalling what we have today. There lies in full view before us a realm of discovery in physical science till now untrodden by mortals even in their dreams. The pioneers are already upon the road to this promised land.... We now know that in atoms of matter there exists a store of energy incomparably more abundant and powerful than any other of which we have thus far obtained control. If once we can liberate this force, what machines we can build. Steam and electricity will be an anachronism at which our children will laugh as we laugh at the hand loom and the spinning wheel. With a pound weight of this radioactive substance we will get as much energy as we now obtain from 150 tons of coal. Or another pound weight can be made to do the work of 150 tons of dynamite.

One hundred and fifty tons of dynamite—enough to blow a modern city into oblivion—compressed to a pound weight which might be held in the hand. No wonder that a sober-thinking scientist like Professor Frederick Soddy of Oxford University should write: "I trust this discovery will not be made until it is clearly understood what is involved." "And yet," he goes on to say, "it is a discovery that is sooner or later bound to come. Conceivably it might be made tomorrow."

One has only to turn the pages back to 1914 to find the grounds for Professor Soddy's uneasiness. All the machines that ingenuity could invent were directed to the single purpose of human destruction. In a hundred laboratories, in a thousand arsenals, factories, and bureaus, physics and chemistry were harnessed to the task of mass death. The gigantic success of the enterprise is shown in the statistics: 10,000,000 known dead soldiers; 3,000,000 presumed dead soldiers; 13,000,000 dead civilians; 20,000,000 wounded; 3,000,000 prisoners; 9,000,000 war orphans; 5,000,000 war widows; 10,000,000 refugees.

This was the tabulation that our mechanical civilization made possible. This is the result of creating machinery for which we have no method of control. This is the consequence of giving children matches to play with....

This, then, is the problem: science will not wait for men to catch up. It does not hold itself responsible for the morals or capacities of its human employers. It gives us a fire engine with which to throw water to extinguish a fire; if we want to use the engine to throw kerosene on the fire, that is our lookout. The engine is adapted to both purposes. With the same hand, science gives us X-rays and machine guns, modern sur-

gery and high explosives, anesthetics and poison gas. In brief, science has multiplied man's physical powers ten thousand fold and in like ratio has increased his capacity both for construction and destruction. How is that capacity to be used in the future? How can we hold in check the increasing physical power of disruptive influences? Have we spiritual assets enough to counterbalance the new forces? How can we breed a greater average intelligence? Can education run fast enough, not only to overcome the lead which science has obtained, but to keep abreast in the race? Can the old savage be trusted with the new civilization which he has created?

These are ugly questions. They are hurled as a challenge at our generation, and upon their answers the future depends.

Now perhaps the alleged sins of science have never been stated more tellingly than in the foregoing, and I would like to ask you to allow me to bring Science herself to the witness stand and ask her what she has to say for herself.

She replies very quietly that there are both statements and implications in the foregoing that need further consideration. First, that, following her conviction that the only matter of supreme importance is to find out the facts, since we have to live with them anyway, she has kept steadily at work since Mr. Soddy raised the hobgoblin of dangerous quantities of available subatomic energies and has brought to light good evidence that this particular hobgoblin—like most of the bugaboos that crowd in on the mind of ignorance—was a myth; that it was exceedingly fortunate that Mr. Soddy's fears did not at the time he uttered them induce a terrified humanity, like a frightened child paralyzed by its fear in the dark, to stop its efforts to get more light, for the worst disasters have always come from panic born of ignorance; that she (Science) regards it as her chief function to deter men from over-hasty conclusions, though she does not always succeed, even with her devotees; that her influence, nevertheless, is always to constrain men to replace panicky, emotional acting by reflective, informed, rational acting. The great world explosions, including the World War, have been mental, not physical. She would ask you then to withhold your judgment until all the available evidence is in.

Now the new evidence born of further scientific study is to the effect that it is highly improbable that there is any appreciable amount of available subatomic energy for man to tap; in other words, that henceforth men like the Bishop of Ripon who are living in fear lest some bad boy among the scientists may some day touch off the fuse and blow this comfortable earth of ours to star dust may go home and henceforth sleep in peace with the consciousness that the Creator has put some fool-proof elements into his handiwork and that man is powerless to do it any titanic physical damage anyway.

This may relieve the Bishop of Ripon, but it will disappoint men like Lord Birkenhead, who have been hypnotized rather than scared by the prospect of tapping enormous new sources of subatomic energy and who

have been reveling in the prospect of some day lying in bed, pressing a button, and calling for two atoms' worth of massage. These men will be obliged to give up their idle Utopian dream and console themselves with the reflection that the chief joy of life after all comes from the striving and the overcoming, that there is much more satisfaction in smashing a resistant atom, as man will doubtless do, than in lying on one's back and watching it explode.

One may become blue or happy, then, according to his temperament, over the fact that it is now highly improbable that we on the earth shall ever get any appreciable amounts of energy from any other source than the sun, whence we have always obtained our energy, directly or indirectly, in the past, but at any rate that is the indication to which we must adjust ourselves, and it serves at least to remove from the account of Science one sin with which she had been charged.

But this is only the first of the sins charged against her. What about the horrible indictment as to the twenty-six million people actually killed in the World War? The answer is two-fold. First, the implication was that Science had a good deal of responsibility for that war—an erroneous implication I think, since war has been the chief business of all the glorious civilizations of the past when there was no science, and with every advance in science I think it becomes less and less so. Indeed, primitive man's chief tools were probably arrowheads and tomahawks and his chief industry, making and using them. When the age of bronze replaced the age of stone a multitude of new peaceful arts were born. Coppersmiths, silversmiths, goldsmiths appeared who developed a wonderful decorative art for use on urns, on vases, on table ware, on personal ornaments, on sarcophagi, on friezes, on monuments—witness the amazing perfection of these arts revealed in Tutankhamen's tomb—and these arts reduced the relative importance of the successor of the arrowhead and tomahawk maker, for these peaceful arts turned men's minds and energies and interests away from war toward peace.

And this has been the consequence I think of practically every advance in science and its applications since that time. Let him whose eyes have recently been focused on the increased effectiveness of tools of destruction and whose fears have been aroused lest the savage in man may use these tools to destroy the race lift up his head and look all around him. I think that such a survey will show conclusively that every scientific advance finds ten times as many new, peaceful, constructive uses as it finds destructive ones. Explosives and fertilizers are basically the same, and even explosives as such meet a dozen peaceful needs to one warlike one. The du Pont Company is known as a powder concern, but that is a well-nigh negligible part of its business. Public thinking is misled merely by the fact that a horror makes better news than a wheat crop. One man blown

before that the maximum of success is definitely related to the maximum of cheerfully rendered service to one's fellows. He sees that back of these service-station men are the refineries, with their expert staffs of chemists and physicists, and that back of these are the geologists and the seismologists and the radio engineers of the producing company, and so on without end.

As I read history the machine age taken in its entirety has actually freed, educated, and inspired mankind, rather than enslaved it. Even the few routine men who feed the machines in Mr. Ford's factory are less routinized and have shorter hours than the dumb agricultural drudge who hoed potatoes for twelve hours a day through all the history of the world before the machine age appeared.

But the far-seeing man will see even deeper than that. It is science and its applications that, through the Ford car and its like, have given to the average man and his family the opportunity or the broadening influences of travel, an opportunity that he is utilizing amazingly, too. It is science and its applications that, through the wonderful development of the art of communications, and through incredible stimulation and acceleration of trade and commerce, have knit the whole world together into a unity that makes war an anachronism. Much more important than treaties, I think, in abolishing war as an instrument of national policy is the growing recognition of the fact, taught in no uncertain language from 1914 to 1918, that in our modern scientific civilization war is no longer well adapted to the attainment of national ends. Let no man henceforth ever make the error of assuming that modern science made the last war. Rather was war, let us hope, the last titanic struggle of militarism to escape the extinction foredoomed for it in a world motivated by modern science. The World War was surely not a sin of science.

Again, can science escape the responsibility for those twenty-six million lives lost during that war? That is a matter of opinion. Granted only that these people could all have got to the fighting line, which, mind you, was of wholly unprecedented length, I am not sure that, with only ancient man's weapons, the sword, the shield, and the spear, given the World's War issues to fight about, the thirteen million who died in battle might not have been even more; and without modern medical science the thirteen million civilian deaths would almost certainly have been augmented.

But that is after all not particularly important. The significant fact is one brought out by Mr. Fosdick himself when he says, "Stop the machines and half the people in the world would perish in a month." That is not an overestimate. Modern science undoubtedly made it possible for more than twice as many people to live comfortably in Europe before the war as could otherwise have done so. Robert Fulton predicted in about the year 1800 A. D. that the time would come when England,

then thought densely populated, would hold 10,000,000 souls. Today she has five times that number. It was but a small fraction of these people, people who owed their very existence to science, who had been created by science, that lost their lives in the war. Had preceding generations abolished or slowed up science, more than this number would have died more miserably, *i. e.*, with greater suffering, for disease with science is bad enough, while without science it is hell.

Now the balance of this whole account shows scarcely a sin to be credited to science. Looked at in the large, I do not think there can be the slightest question that the only hope this world has of maintaining in the future a suitable balance between population and the food supply is found in science. That, in the last analysis, is mankind's greatest problem. Its solution alone, and there are the best of reasons for believing that in the long run it can be solved, is sufficient to warrant the fullest stimulation of both the biological and physical science that can in any way be brought about.

So far in my search for the sins of science I have failed to find her guilty of the charges brought against her, but to me there is one very regrettable tendency in modern life for which science is probably to some extent at least responsible. I refer to the craze for the new regardless of the true, to the demand for change for the sake of change without reference to the consequences, to the present-day widespread worship of the bizarre, to the cheap extravagance and sensationalism that surround us, as evidenced by our newspapers, our magazines, our novels, our drama, our art in most of its forms, our advertising, even our education.

These are, I suppose, inevitable, though I hope transient, accompaniments of the stupendous *rate of change* that modern science and its applications have forced on modern life. The spirit of change has been caught *where its basis has been wanting*. In this particular our generation stands unique in all history, and it is difficult to see how the future can have any other period of such rapid change in store.

In the way he conducted his daily life, my grandfather is undoubtedly more remote from me than he was from the earliest man mentioned in recorded history. In the last analysis this change is primarily due to the introduction of the power machine as a substitute for animal muscle, for this includes everything that has come to this generation through the steam engine, the dynamo, the automobile, the airplane, the telephone, and the radio. Add to this the change in mode of thought due to the new host of discoveries, primarily in physics and biology, and it is no wonder that our age has become infected, or better drunk, with the spirit of change. *In many fields no past time has known and no future time can know* so sudden and so complete a transformation, for the whole gamut of possibilities has been run through by our single generation. In woman's dress, for exam-

ple, the limits are obviously zero and infinity, and whatever there is in between that has not been tried since 1900, isn't likely to be tried very soon, nor would it represent a very large change if it were, so that whatever zest and joy there be in something brand new and radically different in this domain has been tasted to the full by this generation, and will never be tasted in such completeness again.

In physics and its applications these changes have been made by men who were fully conversant with the past, men who knew the difference between perpetual-motion cranks and real discoverers, men who knew the fully verified laws of the future for the whole range of phenomena for which their correctness had been tested; in a word, men who knew that Einstein would have to contain the whole of Newton, *i. e.*, be merely a refinement of, and supplement to, Newton or else that his work would be wrong. But unfortunately many of the other fields in which the spirit of change is rife have no such criteria for past or present truth as physics possesses and no such group of well-trained, capable, and historically informed minds working in them, so that in these fields we cannot be certain whether the changes represent progress or retrogression. In such cases however, the counsel of the wisest heads of the past is the only possible guide for the present.

Be that as it may, I suppose that the present spirit of revolt, of change for the sake of change, the present effort for the new at all costs, the bizarre, the extravagant, the sensational, is in part an inevitable reflex of the rapid changes taking place in our times because of the rapid growth of science. When I go into an exhibition of the so-called secessionists in art in Germany I feel certain that I am in a madhouse, or when I read the literature poured forth by what Mr. Stuart Sherman called the emetic school of modern American writers, I dislike to admit that these modern excrescences of our civilization are a part of the sins of science, but I suspect the spirit of change which we have started has been partially responsible for them.

Yet I am not greatly disturbed even by these. The world will become sick of the emetic school in time. The actual method by which science makes its changes is becoming better understood. The demand for the saner popular books upon it is continually increasing. The remedy is in part at least in understanding it better.

As soon as the public learns, as it is slowly learning, that science, universally recognized as the basis of our civilization, knows no such thing as change for the sake of change, as soon as the public learns that the method of science is not to discard the past, but always to build upon it, to incorporate the great bulk of it into the framework of the present, as soon as it learns that in science truth once discovered always remains truth, in a word that evolution, growth, not revolution, is its method, it

will I hope begin to banish its present craze for the sensational, for the new regardless of the true, and thereby atone for one of the sins into which the very rapid growth of science may have tempted it.

But there is another side even to this admitted sin which will appeal to those of us who want to speed up social change, to those who feel that many of our laws and customs have actually become outgrown, that they were developed for, and were adapted to, the old civilization, not to the new. In many, many instances this view is undoubtedly correct, but here the sin just how admitted becomes a virtue. That the spirit of change is in the air obviously helps rather than hinders in the case of these needed social readjustments. The whole question however is, "Do we know enough yet to make any particular change?" The answer is sometimes yes and sometimes no.

In the latter case the new knowledge that is still needed is just as likely to come from further physical experimenting as from further social studies. The whole history of science shows that it is impossible to predict beforehand where a new bit of knowledge is going to fit in. The amazing thing about that history is the extraordinary rapidity with which each new advance in one domain actually finds its application in another. Physical knowledge *is* social knowledge! Let us not then hold back anywhere in the search for knowledge. *Crescat Scientia, Vita Excolatur.*

There is one other sin that is charged against science, concerning which I wish to say a word, namely, the alleged sin of exalting the material at the expense of the spiritual.

If this means providing food and clothing and wholesome living conditions for millions upon millions of people who would otherwise die of starvation or otherwise drag out such miserable lives that their only recourse would be to dream of another life free from the miseries of this, then science must plead guilty.

The rise of science has undoubtedly filled mankind with a new vision of, a new hope for, and a new effort toward a better human existence than the world has known in the past. If this is exalting the material over the spiritual then she must again plead guilty.

The rise of science has undoubtedly shifted somewhat the relative emphasis of our thinking from individual-soul salvation to race salvation. If this is exalting the material, then she is again guilty.

But, as I myself use words, the foregoing facts do not mean the subordination of the spiritual to the material. I myself think that the aforesaid changes represent an increase rather than a decrease in what I call "spiritual values," *i. e.*, an increase in the essential spirit of the great teacher which was epitomized in the Golden Rule. The essence of Christianity is to be found, I think, in the altruistic teaching and living which Jesus felt to be his chief mission to spread on earth. I have no reason to

think that this spirit is on the wane. Even the membership in the Christian churches, which are the chief stimulants of it, is increasing, and a civilization built upon modern science unquestionably demands its further increase. For as society becomes more and more complex civilization cannot endure at all save as the individual learns in ever-increasing measure to subordinate his own appetites and impulses to the common good, to the group life wherever the two come into conflict. In other words the development of the sense of social responsibility which, broadly speaking, is merely the spirit of the Golden Rule, or slightly differently stated, the stimulation of the "consciences, the ideals and the aspirations of mankind," must be done in ever-increasing measure in a civilization which is growing more and more complex and interrelated under the influence of modern science.

So much for the practical side of the question. There is also a philosophic side. Science is sometimes charged with inducing a materialistic philosophy. But if there is anything which the growth of modern physics should have taught it is that such dogmatic assertiveness about the whole of what there is or is not in the universe as was represented by nineteenth-century materialism is unscientific and unsound. The physicist has had the bottom knocked out of his generalizations so completely that he has learned with Job the folly of "multiplying words without knowledge," as did all those who once asserted that the universe was to be interpreted in terms of hard, round, soulless atoms and their motions. The Oxford biologist, John Scott Haldane, has recently written "materialism, once a scientific theory, is now the fatalistic creed of thousands, but materialism is nothing better than a superstition on the same level as belief in witches and devils."

The best possible cure for materialism is the following chapter from the recent history of physics. A hundred years ago, physics consisted of six distinct, sharply separated departments: Mechanics, Molecular Physics, Heat, Sound, Light, Electricity. The first partition between these compartments to be broken completely down was that between heat and molecular physics, when about 1850 heat was found to be not a substance, as had been supposed, but simply molecular motion. The next discovery was that radiant heat and light were not different categories of phenomena but essentially the same phenomenon, that they were both ether waves identical save for wave-length. The next great discovery, made by Maxwell and Hertz, was that electric wave phenomena are indistinguishable from light and heat save for wave-length, and all these phenomena of radiant heat, light, and electric waves then became fused under the general heading "ether-physics," still sharply separated from matter-physics and also from current electricity.

The next partition to go was that between current electricity and matter-physics, when electric currents were found to be the motions of electrons.

But one partition then remained, that between ether-physics and matter-physics. Quite recently this too is gone, and matter and ether waves are fused together in Einstein's equation and ether and matter become indistinguishable terms. Electrons are now both particles and waves, and light waves are also corpuscles. What does it all mean? Simply that there is an interrelatedness, a unity, a oneness about the whole of nature, and yet still an amazing mystery. Is it all likely in the light of that history that we can long maintain air-tight compartments separating ether (or matter, whichever you will) from life and mind?

Now another finding of modern physics! With astonishing rapidity within the past twenty years man has extended his vision. He has looked inside the atom, a body one-millionth the diameter of a pin head, and found an infinitely small nucleus one-ten-thousandth the diameter of the atom and arranged about it as many as 92 electrons (in uranium) each playing its appropriate rôle in a symmetrical, coördinated atomic system. He has then looked inside that nucleus and counted in uranium exactly 238 positives and 146 negatives, and he has found that the atom changes to something else if any one of these positives or negatives drops out. He has watched the interplay of radiation upon these electrons, both within the nucleus and out of it, and found everywhere amazing orderliness and system. He has learned the rules of nature's game in producing the extraordinarily complicated spectrum of a substance like iron, for example, and it is, in Sommerfeld's phrase, unbelievable *zauberei* (magic) that these complicated rules never fail to predict exactly the observed results. Again, man has turned his microscope upon the living cell and found it even more complex than the atom, with many parts each performing its function necessary to the life of the whole, and again he has turned his great telescopes upon the spiral nebulas a million light years away and there also found system and order.

After all that, is there any one who still talks about the materialism of science? Rather does the scientist join with the psalmist of thousands of years ago in reverently proclaiming "the Heavens declare the glory of God and the Firmament sheweth his handiwork." The God of Science is the spirit of rational order and of orderly development, *the integrating factor in the world of atoms and of ether and of ideas and of duties and of intelligence*. Materialism is surely not a sin of modern science.

I have thus found Science "not guilty" of most of the specific counts raised against her. But after this defense I am ready to go back to the quotation from Mr. Fosdick and join him in raising precisely the question he there asks. For in the last analysis that question is merely whether for any reason whatever, scientific or non-scientific, mankind, or more specifically this particular generation of Americans, has the moral qualities that make it safe to trust it with the immensely increased knowledge and

the correspondingly increased power which has come into its possession. I join him in throwing out that question as a challenge to our generation, for there can be no doubt that our generation has been getting hold of the sources of knowledge and of power at a rate such as no generation of the past has ever known, and so far at least as mechanical power is concerned such as no generation of the future is likely to know.

I am not in general disturbed by expanding knowledge or increasing power, but I begin to be disturbed when this comes coincidentally with a decrease in the sense of moral values. If these two occur together, whether they bear any relationship or not, there is real cause for alarm.

There are certain disturbing indications in America just now of such a coincidence. I will mention but two of them: the one is the obvious effort at the deflation of idealism, the ridiculing of the existence of such a thing as a sense of duty or of social responsibility, not, thank God, by scientists, but rather by a group of American writers which is apparently trying to create something brand new in morals; and the second is the apparently increasing lawlessness just now characteristic of American life. When we have now, and have had for twenty years, *i. e.*, for a time long antedating the advent of prohibition, sixteen times the number of murders per thousand of population than is found in England, there is some reason for alarm. Where individuals in sufficiently large numbers are willing to destroy the basis of confidence in themselves by refusing to be governed by the rules which they themselves, with the aid of their recognized and duly established and agreed upon machinery, have set up, then obviously the foundations of civilization are being completely undermined. If that spirit coexists with the destructive possibilities brought forth by modern science the danger is very great. The remedy, however, is obviously not to try to hold back the wheels of scientific progress, but rather to use every available energy, religious, social, educational, as individuals, as groups, and as a nation, to stay the spread of the spirit of selfishness, lawlessness, and disintegration. That, I take it, is essentially the challenge of Mr. Fosdick's book, and in that challenge I am quite ready to join with him.

At the close of these exercises a buffet luncheon was served to the guests in the Science Building, after which opportunity was given for inspection of the building, followed by witnessing the Thanksgiving football game. In the evening the visitors were guests of the president and faculty at a dinner served in Galloway Hall.

The Building

The building is in "E" shape, constructed of red brick and trimmed with Indiana stone. There are three floors planned for work in chemistry,



CHEMISTRY LECTURE ROOM WITH CAPACITY OF 84

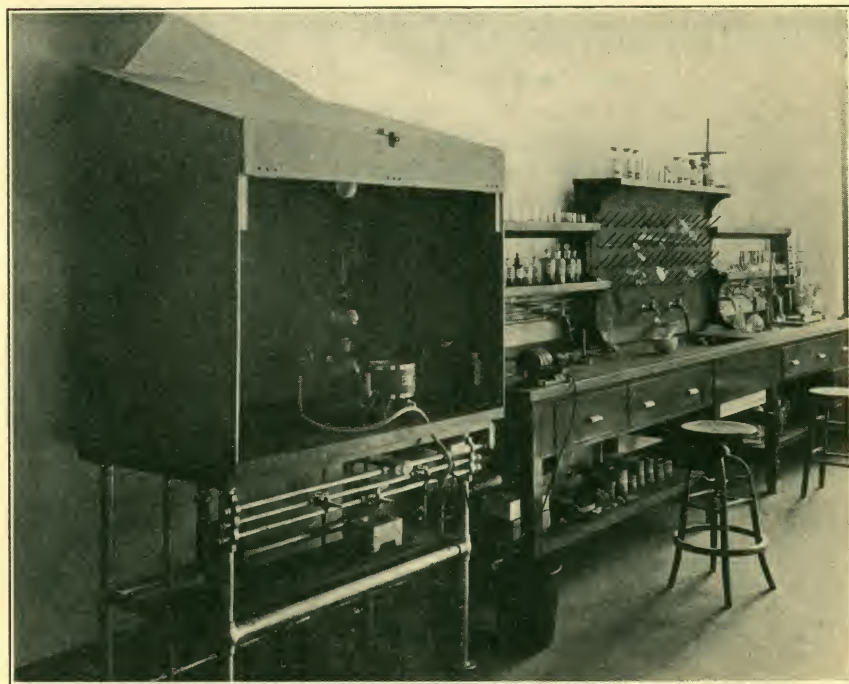
physics, biology, and geology, with a ground area of about 13,700 sq. ft. The basement floor is above ground level except along the front wall and here all windows are well above ground. On this floor are the general stockrooms, located conveniently with reference to the rear entrance and a freight elevator, besides two large and four small chemical laboratories, five physical laboratories, one geological laboratory, a shop, several dark-rooms, and a room for the electric switchboard and automatic air compressor.

The first floor is devoted equally to chemistry and physics, the former to the right and the latter to the left of the main entrance. The front rooms comprise an office, a private laboratory, and a lecture room for the head of each department, and these rooms connect one with the other in the order named. In the commodious end wings are the large general laboratories, a number of smaller laboratories for specialized used, and small stockrooms. In the central wing is located a general lecture and assembly room with inclined floor, standard picture booth, and a seating capacity of 200.

The left half of the second floor is devoted to biology, including office, private laboratory, and lecture room for the head of the department, four large laboratories, and a stockroom. There are also on this floor



PRIVATE OFFICE OF PROFESSOR OF CHEMISTRY AND GEOLOGY



PRIVATE LABORATORY OF PROFESSOR OF CHEMISTRY AND GEOLOGY



GENERAL CHEMISTRY LABORATORY

Capacity: 7 double desks, 18', with 28 cupboards each; 5 are now installed.

laboratories for qualitative, quantitative, organic, and physical chemistry, a special stockroom for these, weighing room, assistants' office and laboratory, small reading room, and several small laboratories.

The attic is lighted both by windows and electricity, and motors, fans, and conduits are so located that large storage room is available.

It is the desire of the science faculty to encourage and develop students inclined to specialization in scientific fields, and also to stimulate the spirit of research. To this end ample laboratory space has been provided, and a few small research laboratories are being equipped for a limited number of capable and ambitious students.

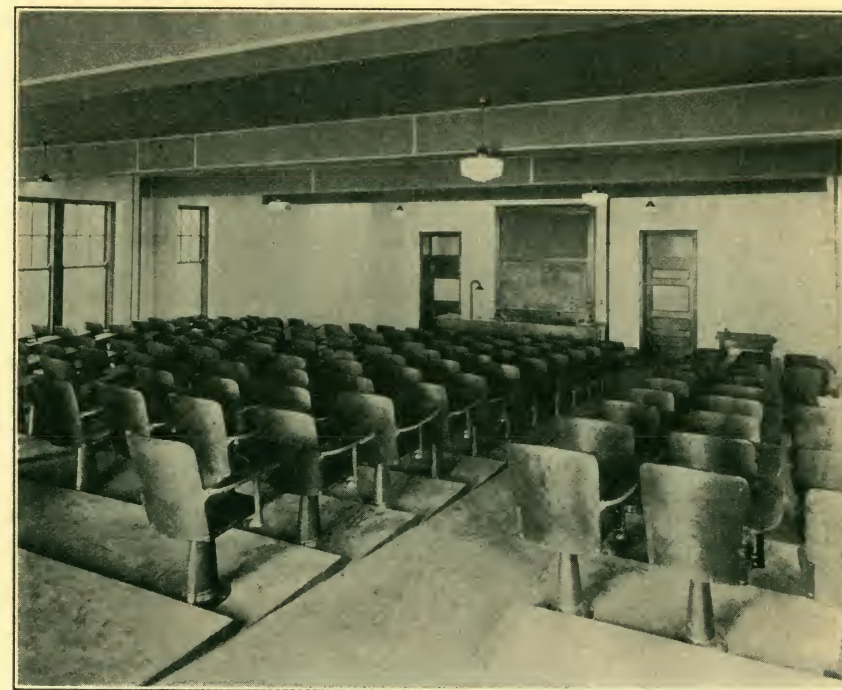
The floor plans as adopted had been worked out, with careful observations and consultations through a number of years by the professor of chemistry, now completing his twenty-seventh year at Millsaps College as head of the department of chemistry and geology. He has expressed appreciation of valuable suggestions and assistance received, especially from Professor G. L. Harrell, head of the department of physics in Millsaps College, Dr. J. N. Swan, head of the department of chemistry, University of Mississippi, Dr. C. E. Coates, head of the de-



PHYSICS LECTURE ROOM



GENERAL PHYSICS LABORATORY



GENERAL LECTURE ROOM WITH CAPACITY OF 200

partment of chemistry, University of Louisiana, and Dr. L. M. Dennis, department of chemistry, Cornell University.

The Chemistry Section

There are two lecture rooms supplied with fixed seats in elevated rows, standard lecture desks with Alberene stone tops and removable down-draft hoods, sliding blackboards with separate control for lighting, and other conveniences. There are four large laboratories and a number of smaller ones to take care of general chemistry, qualitative analysis, quantitative analysis, organic, physical, and industrial chemistry, nitrogen determinations, gas analysis, and research. There are several small rooms for individual and specialized work. The two larger laboratories accommodate seven double desks eighteen feet long and four hoods each six feet.

All desks have Alberene stone tops and sinks, with lead trough inclined the entire length in one direction to sink, and are supplied with an adequate number of outlets for water, gas, compressed air, and 110-volt alternating current. Each electric outlet is wired for 30 amperes.

All hoods are of the high velocity open-type, made of Transite board of Alberene shelf, supported on steel pipe frame, and range from four to



CAMPUS SCENE



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